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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.:	10/662,772	**Conf. No.:**	2183
Filing Date:	15 September 2003	**Art Unit:**	2195
Applicant:	Doyle et al.	**Examiner:**	Wai, Eric Charles
Title:	METHOD, SYSTEM AND PROGRAM PRODUCT FOR MANAGING SYSTEM RESOURCES	**Docket No.:**	RSW920030174US1 (IBMR-0046)

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. 1.131

We, the Applicants in the above-identified patent application, declare as follows:

1. That we are the inventors of the subject matter described and claimed in the above-identified patent application.

2. That prior to July 25, 2003, we conceived and reduced to practice in the United States a method for managing resources in a system, the method comprising:

determining a demand for a service in a plurality of services being provided using a plurality of software servers in the system on an image server in the system, wherein the plurality of services share the resources of the system;

determining attributes of the system on the image server, the attributes comprising a demand for another service in the plurality of services and at least one attribute of a resource of

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the system, the resource comprising one of: a software server, the image server, a network, or a storage system; and

provisioning resources for the service based on the demands and the at least one attribute of a resource using the image server.

3. That prior to July 25, 2003, we conceived and reduced to practice in the United States a system for managing resources in a system, the system comprising:

a plurality of software servers for providing a plurality of services; and

an image server for provisioning resources for the plurality of services, wherein the plurality of services share the resources of the system, the image server including:

a demand system for determining a demand for a service in the plurality of services and a demand for another service in the plurality of services;

an attribute system for determining at least one attribute of a resource of the system, the resource comprising one of: at least one of the plurality of software servers, the image server, or a network; and

a provisioning system for provisioning a resource for the service based on the demands and the at least one attribute of a resource.

4. That prior to July 25, 2003, we conceived and reduced to practice in the United States a program product stored on a recordable medium for managing resources in a system, which when executed comprises:

program code for determining a first demand for a service in a plurality of services being provided using a plurality of software servers in the system, wherein the plurality of services share the resources of the system;

program code for determining at least one attribute of a resource of the system, the resource comprising one of: a software server, the image server, a network, or a storage system;

program code for determining a second demand for at least one other service in the plurality of services sharing the system; and
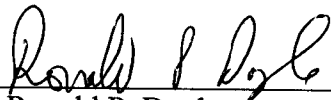
program code for provisioning a resource for the service based on the first demand, the at least one attribute of a resource, and the second demand.

5. That the present invention is described in a Disclosure of Invention (Exhibit "A") submitted to the IBM Corporation Patent Department prior to July 25, 2003. Specifically, section titled main idea on page 2 describes the invention as defined by the independent claims in the application. The dates have been redacted. We had submitted an IBM Invention Disclosure At that time (and to this day) IBM had a program called the World-wide Patent Tracking System (WPTS). The co-inventor(s) fill out the form and have multi-access to their disclosure until they submit it to Intellectual Property (IP). After their submission the IP function assigns a disclosure number and locks the inventors out of making any changes. Fortunately, there is a button at the end of the disclosure that allows Post-disclosure Updates. The original disclosure and these updates each receive an unchangeable time stamp. Our original invention disclosure is time-stamped by the WPTS with a date prior to July 25, 2003.

6. That, subsequent to the conception of the invention, and up until the patent application filing date of September 15, 2003, we diligently and actively assisted the IBM Corporation Patent Department in the planning, preparation, review, and filing of the above-identified patent application.
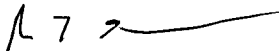
Declarants further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful false statement may jeopardize the validity of this application or any patent resulting therefrom.

Date: 10/13/08   _____
                                   Ronald P. Doyle

Date: 10/13/08   _____
                                   David L. Kaminsky

Required fields are marked with the asterisk (*) and must be filled in to complete the form .

*Title of disclosure (in English)
Enhanced Methods for On-Demand Re-Provisioning

Summary

Status	Final Decision (File)
Final Deadline	
Final Deadline Reason	
Docket Family	RSW9-2003-0174
*Processing Location	Raleigh - RSW
*Functional Area select	(Horn: WebSphere System House - Technology Group (Kopkind,King)) Horn: WebSphere System House - Technology Group (Kopkind, King)
Attorney/Patent Professional	▰▰▰▰/Raleigh/IBM
IDT Team select	▰▰▰▰/Raleigh/IBM ▰▰▰▰/Raleigh/IBM
Submitted Date	▰▰▰▰06:14:55 AM MDT
*Owning Division select	AIM
Incentive Program	
Lab	
*Technology Code	810A
PVT Score	38

Inventors with a Blue Pages entry

Inventors: Ron Doyle/Raleigh/IBM, David L Kaminsky/Raleigh/IBM@IBMUS

Inventor Name	Inventor Serial	Div/Dept	Inventor Phone	Manager Name
Doyle, Ronald P.	645076	7G/BRQA	▰▰▰▰	▰▰▰▰
Kaminsky, David L.	656353	61/I4CA	▰▰▰▰	▰▰▰▰

> denotes primary contact

Inventors without a Blue Pages entry

IDT Selection

Attorney/Patent Professional	▰▰▰▰/Raleigh/IBM
IDT Team	▰▰▰▰/Raleigh/IBM ▰▰▰▰/Raleigh/IBM
Response Due to IP&L	▰▰▰▰

*Main Idea

1. Background: What is the problem solved by your invention? Describe known solutions to this problem (if any). What are the drawbacks of such known solutions, or why is an additional solution required? Cite any relevant technical documents or references.

The decision to provision (and re-provision) resources in an On-Demand environment is commonly made by considering the load and expected load of a service and deciding whether the current amount of resources allocated to the service are sufficient to meet response time or SLA targets. Current systems use sophisiticated mechanisms to predict expected load and to calculate necessary resources to deliver a target service level.

2. Summary of Invention: Briefly describe the core idea of your invention (saving the details for questions #3 below). Describe the advantage(s) of using your invention instead of the known solutions described above.

This invention enhances current provisioning systems by expanding the information used to decide when to reprovision (and how much to reprovision). In addition to predicted load, we consider the load (and expected load) of other services sharing the infrastructure, the state and type of software on machines to be reprovisioned, cache state, the time to reprovision and the network/image server load.

3. Description: Describe how your invention works, and how it could be implemented, using text, diagrams and flow charts as appropriate.

Re-provisioning software to meet customer demand can be a simple process in a homogenous environment supporting a single customer. However, in the real world of multiple customers/applications and shared infrastructure the decision of when and which resources to allocate to a service is not straightforward.

We extend traditional provisioning systems for dynamic reprovisioning of resource in an On-Demand environment to considers the load of not only the service being provisioned, but also the load and requirements of services sharing the resources. We create a function to determine the benefit of assigning candidate resources to a given service based on numerous factors. The cache state of a service (and hence the time necessary to re-warm the cache for the service losing the resources) is factored into the overall decision. The load on the network and image server is also considered (it may be more beneficial for overall service delivery to delay a reprovisioning action based on network/image server load). The time to reprovision is also considered against the expected/predicted/historical load of a service, to determine whether a re-provisioning decision is warranted.

The novelty of this invention is the enhanced set of information used to make informed provisioning decisions. The infrastructure for provisioning and causing software/hardware allocations to occur are prior art and well-known within the industry.

*Patent Value Tool

* 1. Select the single most appropriate technology category for your invention from the following technologies list.
(810A) PPM 800 EBOD - ebusiness on demand-810A Fusion of IT, business process and culture
Comments
Are there any additional significant markets where the invention is likely to have impact?
● Yes ○ No

Please identify them:
Autonomic systems, middleware management

*2. Have you implemented the invention (e.g., made a prototype) or otherwise shown that it is workable?
○ Yes ● No

*3. Has the subject matter of the invention or a product incorporating the invention been offered for sale, or is it likely to be offered for sale, as part of an IBM product or service?
● No known product plans within 2 years
○ Maybe; GA 1-2 years away
○ Yes; GA within 3-12 months
○ Yes; GA within 3 months
○ Yes; product has been announced

*4. Has the invention been commercially used (internally or externally) by IBM or another entity (e.g., included in or used to make products, or prototypes provided to a customer)?
○ Yes ● No

*5. In what type of product might a competitor include the invention?
Utility Data Center

What competitor(s) (indicate home country of such competitors if not United States)?
HP, Sun, Microsoft

*6. How easily can the use of the invention by a third party be detected?
○ Undiscoverable; third party must admit use for IBM to know
○ Difficult; e.g.; with reverse engineering or examination of available code
○ With work; e.g.; using test cases; but not reverse engineering
○ Easily; by running & viewing product operation
● Trivally; without purchase of product; e.g.; by reading product literature

*7. Is the invention applicable to a standard?
○ Yes ● No

*8. Have you, or any of the other inventors, submitted this invention disclosure or a similar invention disclosure previously?
○ Yes ● No

**9. Please list the invention disclosures (previously submitted or about to be submitted), products, patents, or publications that you and the other inventors feel are the most relevant to your invention (e.g., pertaining to the problem you are solving, including other solutions to the problem), be they from you or anyone else, or if not applicable, enter "None":
none

* 10. Was the invention made in the course of any activity that involved any other party, be it
- The government
- A customer (such as an RFQ)
- A development partner
- An alliance
- Any contract activity
- As part of a standards setting activity
- Other persons not employed by IBM
○ Yes ● No

*11. Have you ever disclosed your invention to anyone outside IBM, or do you plan to do so in the future?
○ Yes ● No

*12. If the invention relates to a product or service that is outside the scope of your business unit, please recommend IBM business unit(s), IBM location(s) or individual(s) within IBM that you think would provide a competent evaluation of your invention:

*PVT II

All of the questions below are required and must be answered in order to calculate a PVT Score

* 10. Was the invention made in the course of any activity that involved any other party, be it
- The government
- A customer (such as an RFQ)
- A development partner
- An alliance
- Any contract activity
- As part of a standards setting activity
- Other persons not employed by IBM

○ Yes ● No

*11. Have you ever disclosed your invention to anyone outside IBM, or do you plan to do so in the future?
○ Yes ● No

*12. If the invention relates to a product or service that is outside the scope of your business unit, please recommend IBM business unit(s), IBM location(s) or individual(s) within IBM that you think would provide a competent evaluation of your invention:

*PVT II

All of the questions below are required and must be answered in order to calculate a PVT Score
A.Threshold Questions
  *1. Operability - Is there an identifiable operable embodiment of the invention (i.e., an embodiment that has been demonstrated or that would be reasonably expected to provide the benefits of the invention)?
  ● Yes ○ No

Reasons for above answer:

  *2. Novelty- Are one or more concept(s) of the invention novel over what is already known in the literature, existing commercial products, patents, and earlier IBM invention disclosures?
  ● Yes ○ No
  Reasons for above answer:

B.Valuation Questions
  *1. Adequacy of Description:
  ○ Inadequate; invention unclear from description
  ○ Incomplete; essential features missing
  ○ Further clarification or implementation detail needed
  ● Clear and complete as is
  State reason for answer:

  *2. Technical contribution of invention:
  ○ None
  ● Minor addition to known technology
  ○ Significant addition to known technology
  ○ Major advance in technology
  Reasons for above answer:

  *3. Describe the problem solved/benefit provided and the implementation cost of the invention compared to existing or reasonably expected alternatives:

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○ Minor problem/incremental benefit - significant implementation cost
○ Significant problem; substantial benefit - significant implementation cost
● Minor problem/incremental benefit - minor implementation cost
○ Significant problem/substantial benefit - minor implementation cost

*4. Are any alternatives to the invention available to those wishing to avoid its use?
○ Suitable alternatives available
● Alternatives have drawbacks
○ No feasible alternatives
Reasons for above answer:

*5. Describe the likelihood of use of the invention (answer each):
IBM's customers?   ● Unlikely ○ Possible ○ Probable ○ Definite
IBM's suppliers/vendors? ● Unlikely ○ Possible ○ Probable ○ Definite
IBM's competitors?   ○ Unlikely ● Possible ○ Probable ○ Definite
IBM?   ○ Unlikely ● Possible ○ Probable ○ Definite
Reasons for above answer:

*6. What % of third party products in the technical field will likely contain the invention?
○ < 25%
● 25-50%
○ 50-75%
○ > 75%
Reasons for above answer:
The technical field is assumed to be application re-provisioning (repurposing collections of computers to adapt to changing computing workloads) in an autonomic computing or on-demand hosting environment.

*7. How long is the invention likely to be used in products by IBM or others?
○ < 5 years
○ 5-10 years
● 10-15 years
○ > 15 years
Reasons for above answer:

*8. How easily can use of the invention by a third party be detected?
○ Undiscoverable; third party must admit use for IBM to know
● Difficult; e.g.; with reverse engineering or examination of available code
○ With work; e.g.; using test cases; but not reverse engineering
○ Easily; by running & viewing product operation
○ Trivially; without purchase of product; e.g.; by reading product literature
Reasons for the above answer, including description of how use could be detected:
The answer ranges from Difficult (if the capabilities are hard-coded) to Easily (is the capabilities are surfaced to a user for possible tuning).

Evaluation

This evaluation was entered by ██████████/Raleigh/IBM on ███████

Team Evaluation
What is the team's evaluation of this disclosure?   Search
Date rated :████████
Evaluation Comments

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Form Revised 09/01/02)

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Final Evaluation History	Who made the final evaluation	Final evaluation date
Search	████████████/Raleigh/IBM	████████

Search Information

Date sent:	*Target completion date:	Search Results Received date:
Who was the search sent to (This area is to designate a Local Searcher name or WAIPL):		
*Search Type: ☐ Patentability ☐ Clearance ☐ Validity ☐ State of Art		
*Features to be searched:		

Search Office Information

Target completion date:	☐ Search has been delayed	Ship/Return date:
Search Conducted By		
Comments		

Final Decision

This decision was entered by ████████████/Raleigh/IBM on ████████████

Decision: File	Status: N/A
PPM Area: 700 - Network Computing	Attorney Rating: 2
Date of Final Decision : ████████	

Additional filing information

Planned Filing date:

Filing comments:

Additional decision comments

Final Decison History

Entered on ████████████ by ████████████
File N/A ████████ Docket Family: RSW920030174

Post Disclosure Text & Drawings

To add additional information related to this disclosure once it has been submitted, click the action button below and a new document will be opened for you to enter the new information. To view existing post disclosure information, double-click on the item in the list below (if there has been additional information entered), and the document will open for you to view.

Date entered   Post disclosure information (comments and drawings)

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